



Coastal Engineering Technical Note

RECOMMENDED SCALES OF AERIAL PHOTOGRAPHY FOR MAPPING BARRIER ISLAND VEGETATION

PURPOSE. Identification of plant species, communities and zones of a barrier island can be important for planning and considering environmental impacts. In many instances vegetational patterns, boundaries, and ground coverage can be more easily identified from aerial photography than from the ground observations. This note provides guidelines on the scale of aerial photography recommended for identification of the various vegetational features on barrier islands.

APPROACH: The Coastal Engineering Research Center's Field Research Facility (FRF) located on the Outer Banks of North Carolina was used as the testing area. Because this area was used as a practice bombing range during WW II, some of the vegetational zones typical of a barrier island have been modified. The following zones are identifiable at the FRF and plots were marked in these areas: bare sand, foredune, shrub, grassy dune, grassy sand flat, maritime forest and marshes. The major plant communities in all of the plots were determined and ground coverage of each of the communities within the plots were mapped (Figures 1 and 2). Vegetative specimens of all plants present in the plots were collected and identified. Color infrared photography proved to be the most reliable for use in vegetation mapping. Color infrared photography was taken of the site from altitudes of 1000, 3000, 6000, and 8000 feet in both 70 mm and 9" x 9" formats. The resulting scales ranged from 1:2000 through 1:30,500.

CONCLUSIONS: Through analysis and comparison of the ground truth data, the following conclusions are drawn: Vegetational zones are distinguishable at scales up to at least 1:20,000 (Figure 1), although important details may be lost at this scale. General characteristics such as community type, percent ground cover and land-water interface are clearly distinguishable at scales up to 1:12,000 (Figure 2). At scales smaller than 1:12,000 many characteristics are lost. For best results in identifying species type, low-level photography at an approximate scale of 1:4000 or larger should be used. In general, grasses cannot be distinguished by species from aerial photography. To distinguish community types, aerial photography at a scale of 1:12,000 (Figure 2) or larger should be used with some ground truth data to verify plant communities.

ADDITIONAL INFORMATION: Contact the CERC Coastal Ecology Branch (202) 325-7393.